RADIOCOMMUNICATIONS TEST REPORT

Applicant:	Huawei Technologies Co., Ltd.
Address:	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C
Product Name:	u-blox LEA-M8T Module for GPS/BDS/GLONASS
Product Model:	02500010
Date of Receipt Sample:	2017-04-14
Start Date of Test:	2017-04-27
End Date of Test:	2017-05-15
Test Result:	Pass

Remark: All tests were conducted and witnessed in Reliability Laboratory of Huawei Technologies Co., Ltd.

Test Engineer :	Zhang Weimin	Sign On File
Report Approved By :	Kidd Yang Senior Peoject Engineer	Digitally signed by Kidd Yang Location: Intertek Testing Services
Date :	12 July 2017	

This summary is part of the full report and should be read in conjunction with it.
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MODIFICATION RECORD

No.	Last Report No.	Modification Description
1	---	First report.

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CONTENT

1 General Information 4
1.1 Applied Standard 4
1.2 Test Location 4
2 Test Summary 5
3 Description of the EUT 6
3.1 General Description 6
3.2 EUT Identity 6
3.3 Technical Description 7
4 Test Setups and Test Procedures 8
4.1 Test Item 1 – Adjacent Signal Selectivity 8
4.2 Test Item 2 – Spurious Emission 10
5 System Measurement Uncertainty 13
Annex A Definitions and Abbreviations 14

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1 General Information

1.1 Applied Standard

European Norms (EN):	ETSI EN 303 413 V1.1.1 (2017-06)

1.2 Test Location

Test Location 1 (TL1):	Global Compliance and Testing Center of Huawei Technologies Co., Ltd. (Reliability Laboratory of Huawei Technologies Co., Ltd.) Address: Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C
Remark:	Reliability Laboratory of Huawei Technologies Co., Ltd. has been accepted by Intertek as a Level 3 Recognized Satellite Laboratory.(Acceptance Number: L3-CN-15-3002)

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2 Test Summary

NOTE 1: Unless otherwise specified, all test items were tested in test location TL1.

NOTE 2: In the following table(s), the “NA” denotes “Not applicable”, the “NT” denotes “Not tested”, and “NC” denotes “No conclusion”.

The detailed TEST RECORDS (TEST INFORMATION, TEST PLANS and TEST RESULTS) for the following test items refer to the attachment document of “SYBH(R)03029446EA-2-TR”.

#	Test Item	Reference Standard	Verdict
1	Adjacent signal selectivity	EN 303 413, §4.2.1 & 5.4	Pass
2	Spurious emission	EN 303 413, §4.2.2 & 5.5	Pass

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3 Description of the EUT

3.1 General Description

The EUT is a GNSS receiver user equipment (GUE) module, supporting GPS, GLONASS, and BDS functions, which can be installed in different host equipments, e.g.:

- HUAWEI BBU series: HUAWEI BBU3900, BBU3910, BBU3910A1, BBU3910A2, BBU3910A3, BBU3910A4, USU3910, etc.
- HUAWEI IPCLK series: IPCLK3000, IPCLK500, etc.
- HUAWEI BITS series: SYNLOCK V3, SYNLOCK T6020, etc.

3.2 EUT Identity

NOTE: Unless otherwise noted in the report, the functional boards installed in the units shall be selected from the below list, but not means all the functional boards listed below shall be installed in one unit.

3.2.1 Board

Name	Hardware Version	Description
02500010	B.3	Receiver module,GPS/BDS/GLONASS,50ns,32

3.2.2 Sub-Assembly

Name	Model	Manufacturer	Description
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3.3 Technical Description

NOTE: For the detailed technical descriptions, see the applicant/manufacturer's specifications or user manual.

Characteristics	Description	
Supported GNSS	BDS: ☒ B1I Galileo: ☐ E1 ☐ E5a ☐ E5b ☐ E6 GLONASS: ☒ G1 ☐ G2 GPS: ☒ L1 ☐ L2 ☐ L5 SBAS: ☐ L1 ☐ L5	
Receive-only Operating Mode	☒ Supported ☐ Not supported	
Antenna System	Antenna type	☐ No antenna supplied with EUT ☒ Dedicated (removable antenna supplied with EUT, designed as an indispensable part of EUT) ☐ Integral (permanent fixed antenna, which may be built-in, designed as an indispensable part of EUT): ☐ with (temporary) antenna connector ☐ without (temporary) antenna connector

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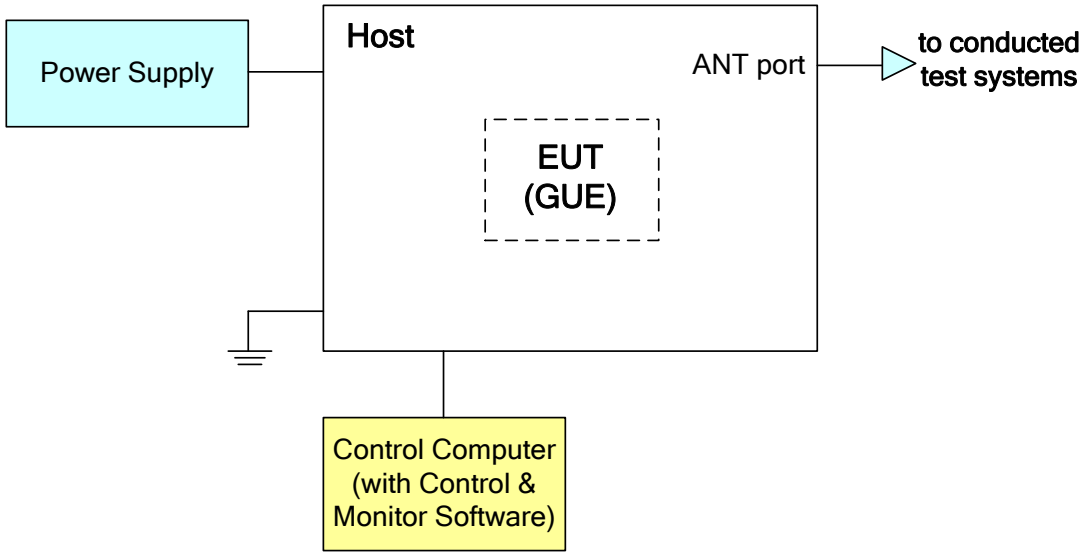
4 Test Setups and Test Procedures

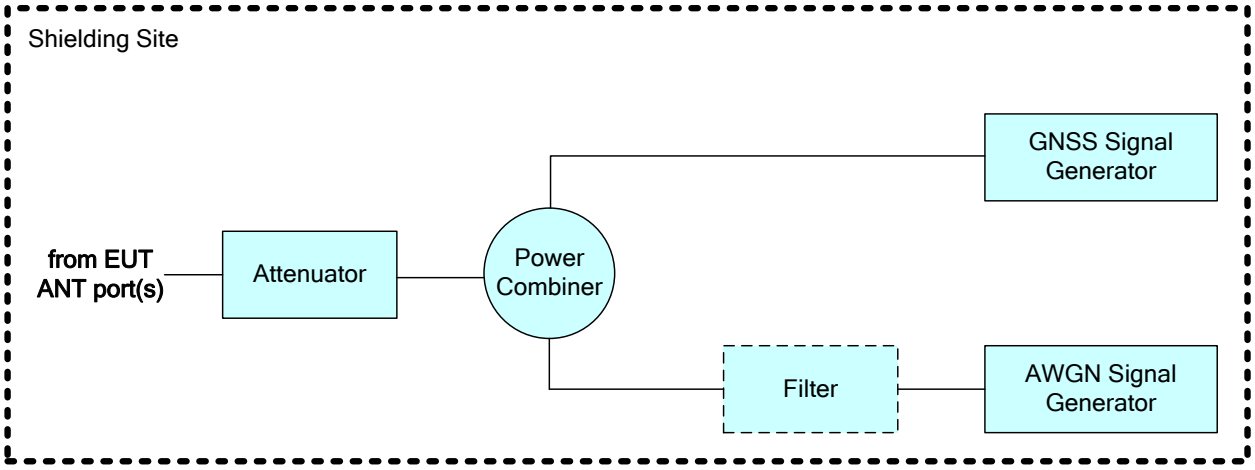
4.1 Test Item 1 – Adjacent Signal Selectivity

4.1.1 Conducted

4.1.1.1 EUT Arrangement



4.1.1.2 Test Setup



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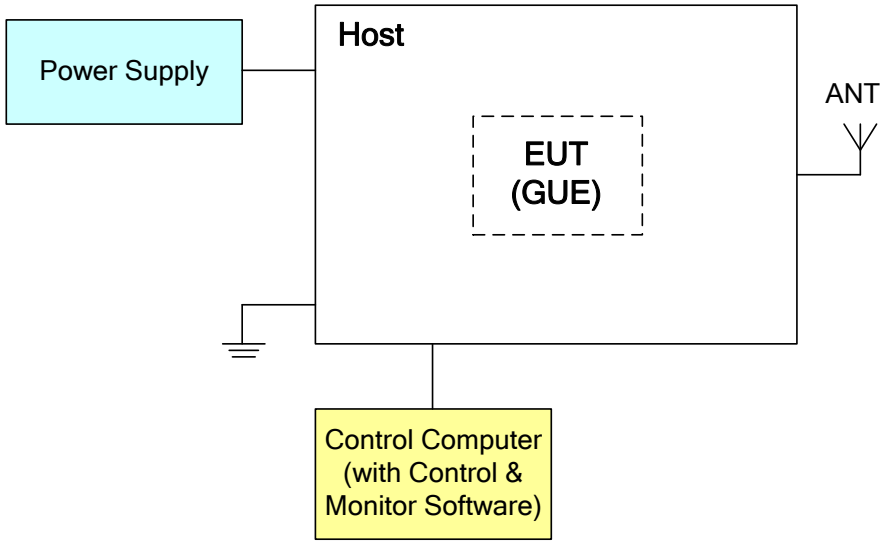
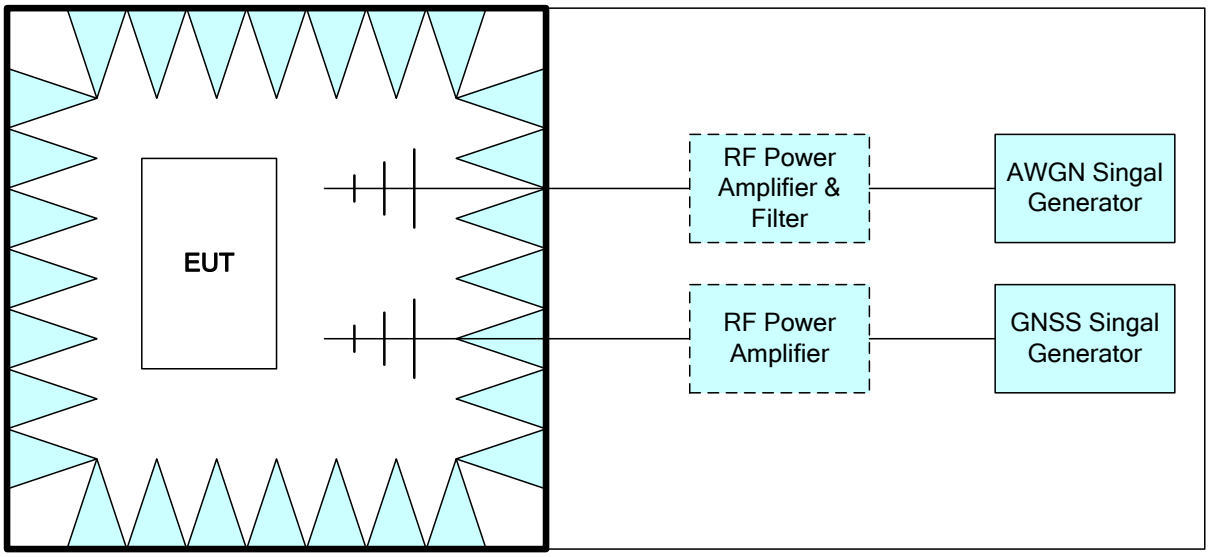
4.1.2 Radiated

4.1.2.1 EUT Arrangement



4.1.2.2 Test Setup



The test site and the applicable measurement procedures as described in ETSI EN 303 413 clause 5.3.3 are used.

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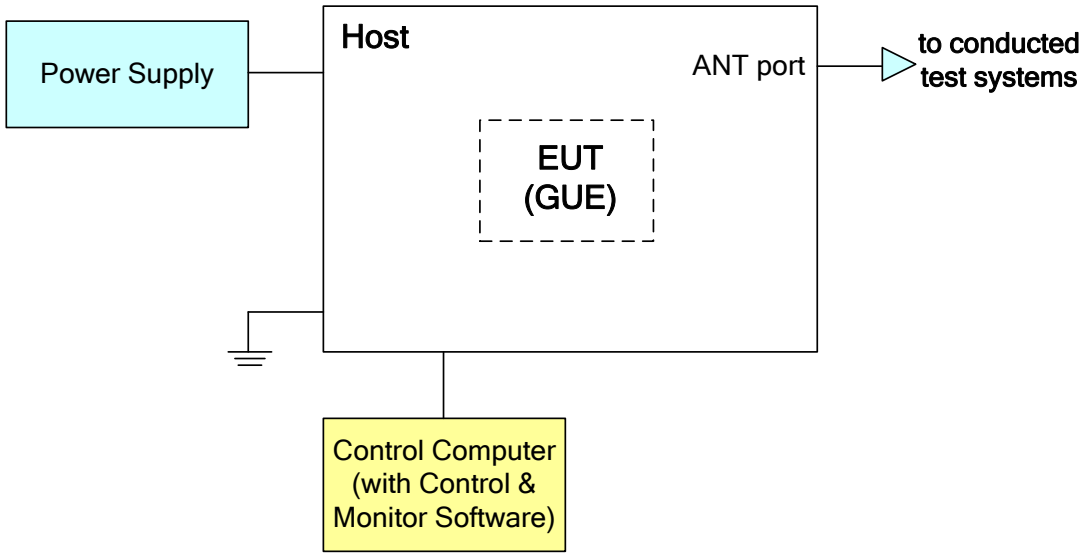
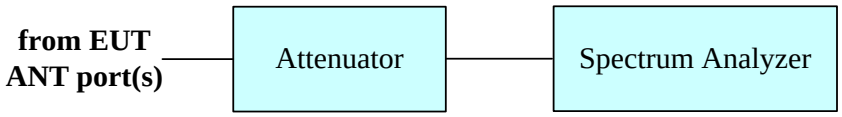
4.2 Test Item 2 – Spurious Emission

4.2.1 Conducted

4.2.1.1 EUT Arrangement



4.2.1.2 Test Setup



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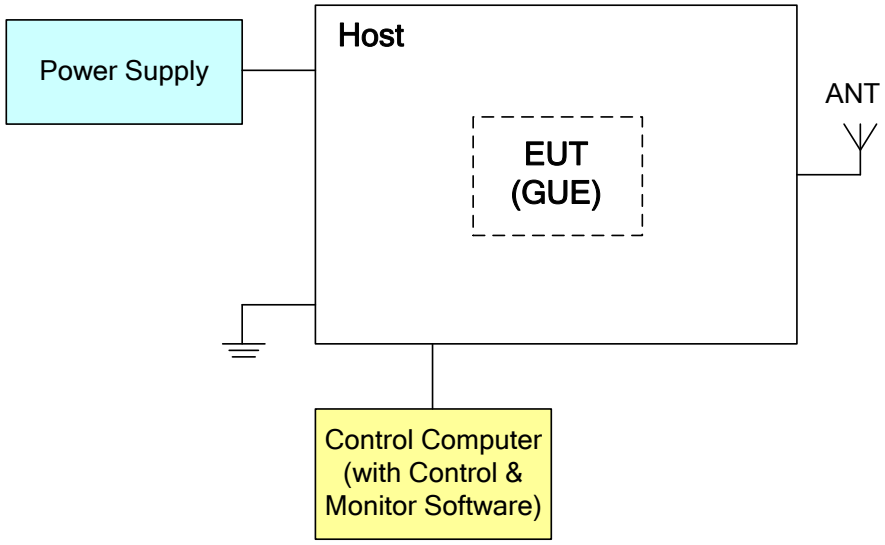
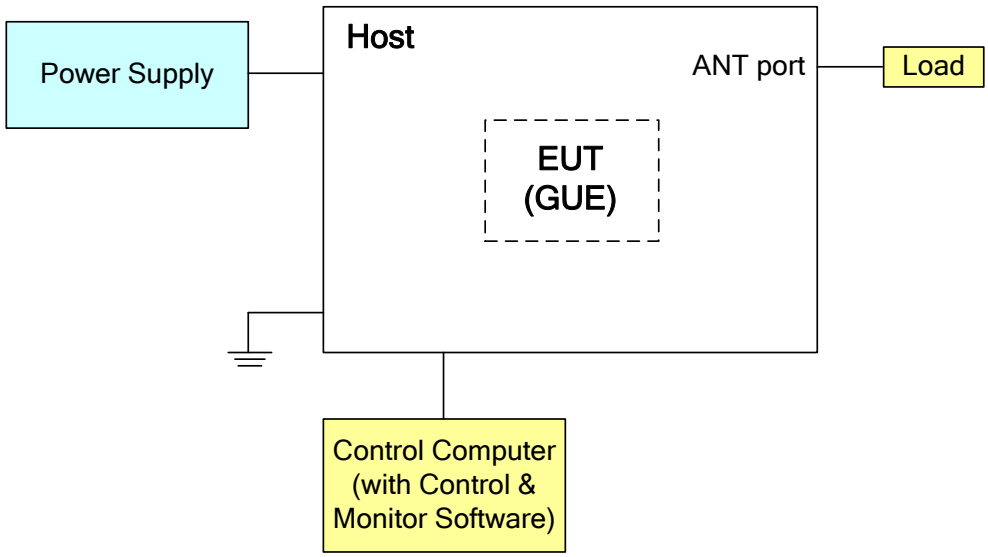
4.2.2 Radiated

4.2.2.1 EUT Arrangement



(1) Radiated – Cabinet and antenna (for the case of GUE with integral antenna and no temporary antenna connector)



(2) Radiated – Cabinet (for other cases)

4.2.2.2 Test Setup

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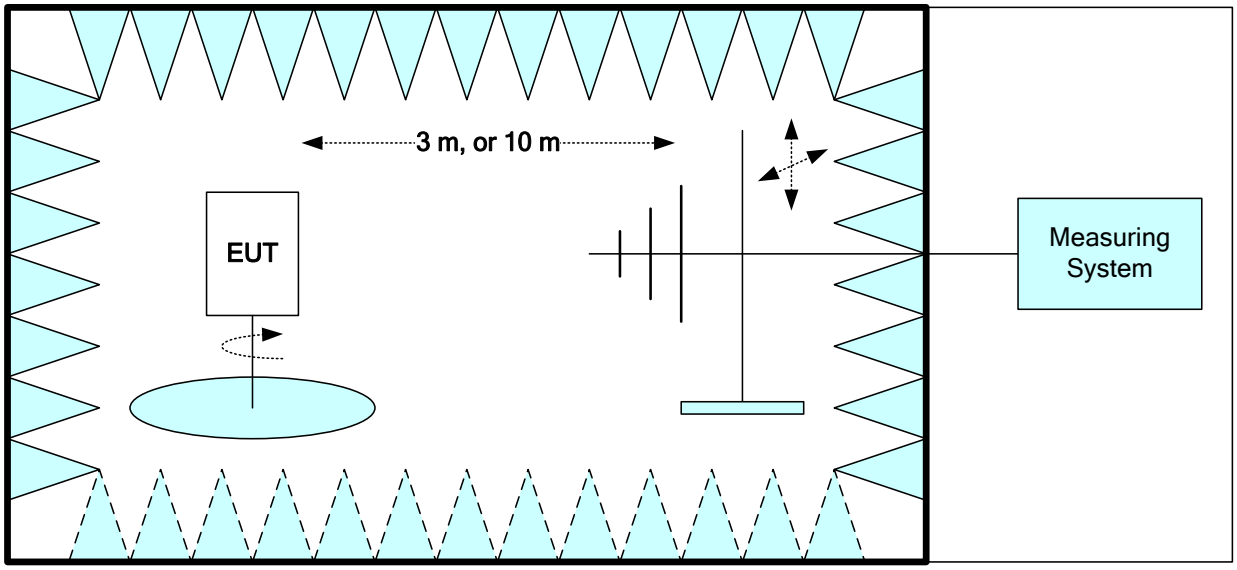

A test site fulfilling the requirements of Recommendation ETSI EN 303 328Annex B is used. The EUT is placed on a non-conducting support and operated from a power source via a RF filter to avoid radiation from the power leads. Mean power of any spurious components is detected by the test antenna and measuring instrument. At each frequency at which a component is detected, the EUT is rotated and the height of the test antenna adjusted to obtain maximum response, and the e.r.p. of that component determined by a substitution measurement (in fact, test systems are pre-substituted by carrying out the substitution measurement for each frequency and by recording the obtained value into test system software as a correction factor). The measurement is repeated with the test antenna in the orthogonal polarization plane.

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5 System Measurement Uncertainty

NOTE: According to clause 5.2 of ETSI EN 303 413, no detailed uncertainty parameters and maximum uncertainty requirements are defined. The following list the parameters used by the test lab.

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 as following:

Parameters	Measurement Uncertainty
GNSS and AWGN signal level, conducted	< 1.5 dB (k=2)
Spurious emission level, conducted	< 3 dB (k=2)
Spurious emission level, radiated	< 6 dB (k=2)

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Annex A Definitions and Abbreviations

ANT	antenna
AWGN	additive white Gaussian noise
BDS	BeiDou navigation satellite system
C/N0	carrier to noise-density ratio, expressed in dB-Hz
CE	conformité européenne (uropean conformity)
EIRP, e.i.r.p.	equivalent isotropically radiated power
ERP, e.r.p.	effective radiated power
EUT	equipment under test
GEO	geostationary earth orbit
GLONASS	globalnaya navigatsionnaya sputnikovaya sistema (global navigation satellite system)
GNSS	global navigation satellite system
GPS	global positioning system
GUE	GNSS user equipment (Note: in this report, the GUE as the GNSS receiver is the part of the EUT, which may be a system, host or equivalent)
IGSO	inclined geosynchronous orbit
MEO	medium earth orbit
RF	radio frequency
RMS	root mean square
RNSS	radio navigation satellite service
RX	receiving, or receiver
SBAS	space based augmentation system
UE	user equipment

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